



Beaverdam Swamp Reservoir 2007



Beaverdam Swamp Reservoir is a 635-acre water supply reservoir for Gloucester County. It was constructed in 1989 and reached full pool level during the winter of 1989-1990. The reservoir and park provide a variety of opportunities for the outdoor enthusiast. There are trails for hiking, biking, and horse riding. You may see deer, turkey, bald eagles as well as a variety of waterfowl. The reservoir serves as an attractive place for anglers to try their luck. The reservoir has plenty of interesting contour and structure. Several creek arms, numerous large points, and an abundance of flooded timber all add to the extreme variability of topography and fish habitat. The use of outboard engines is prohibited on Beaverdam Swamp Reservoir. The use of trolling motors is permitted. There are two boat ramps to Beaverdam Swamp Reservoir. The main ramp is located at the park off Route 616 and the other ramp is off Route 606. The Route 606 ramp offers easier access to the northern areas of the reservoir, but has been specifically designated for annual launch pass holders. Boat and equipment rental, bait, and snacks can be obtained at the main entrance. There is also a fishing pier, picnic facilities, and play areas for children. The park is open 7 days a week and every day of the year except for Christmas and New Year's Day. The concession and main boat ramp can be reached by taking Route 616 from Route 17 (Business), just to the west of Gloucester. For further details, please call the concessionaire at (804) 693-2107.

The Virginia Department of Game and Inland Fisheries conducted an electrofishing survey of Beaverdam Swamp Reservoir on April 24, 2006. The reservoir was last sampled on May 3, 2005. The 2006 electrofishing survey consisted of covering six shoreline sections. Each shoreline area took 20 minutes to sample for a combined effort of two hours. The combination of these six sampling runs provides a picture of the present fish assemblage. The water temperatures varied slightly from 17 – 17.5°C. Electrofishing efforts consisted of shocking along the shoreline habitat as close as possible, with the majority of the effort concentrated in the 2 to 4 foot depth range. The sample collected 10 fish species. Predator species of bass, black crappies and chain pickerel were collected during each run. Species such as bluegills and redear sunfish were only collected over the course of two runs. This report will concentrate primarily upon the four game fish species of largemouth bass, bluegill, black crappie and redear sunfish.

				CPUE	(#/hr)	
Species	Wt (lbs)	N	Young	Stock	Quality	Total CPUE
Largemouth Bass	153.47	214	46.5	25	35.5	107
Black Crappie		78	0.5	5	33.5	39
Bluegill		263	262.5	105	27	394.5
Redear Sunfish		51	10.5	55.5	10.5	76.5
Green Sunfish		2	1.5	0	1.5	3
Brown Bullhead		1				3
White Perch		1			3	3
Chain Pickerel		1		3		3
Gizzard Shad		1		3		3
Golden Shiner		1				3

Table 1. Total weight, number, and CPUE of fish sampled by electrofishing Beaverdam Swamp Reservoir on April 24, 2006.

Species	# Collected	Largest Length	Average Length
Largemouth Bass	214	22.13"	9.46"
Black Crappie	78	12.68"	9.3"
Bluegill	263	7.17"	3"
Redear Sunfish	51	8.15"	5.75"

Table 2. Summary of primary game fish species collected from Beaverdam Swamp Reservoir on April 24, 2006.

The largemouth bass population within Beaverdam Swamp Reservoir appears to be reasonably balanced even though an abundance of small bass less than 8 inches were collected during the survey. A total of 214 largemouth bass were collected. The CPUE (Catch Per Unit of Effort) for largemouth bass was 107 f/hr and showed an increase from the 2005 sample (CPUE 66.75 f/hr). The 2006 catch rate is the highest rate of all Region 1, District 1 impoundments sampled in 2006. The size distribution of the collected bass can be seen on the enclosed length frequency graph. The overall size structure favors the presence of bass in the 9 to 13 inch range. The 2006 sample revealed no signs of poor recruitment. The majority of the catch rate increase is due to the abundance of young bass that are present. The 2004 and 2005-year classes have shown extraordinary recruitment with an abundance of bass in the 3 to 8 inch range. The catch rate of young bass went from 18/hr in 2005 up to 46.5/hr in 2006.

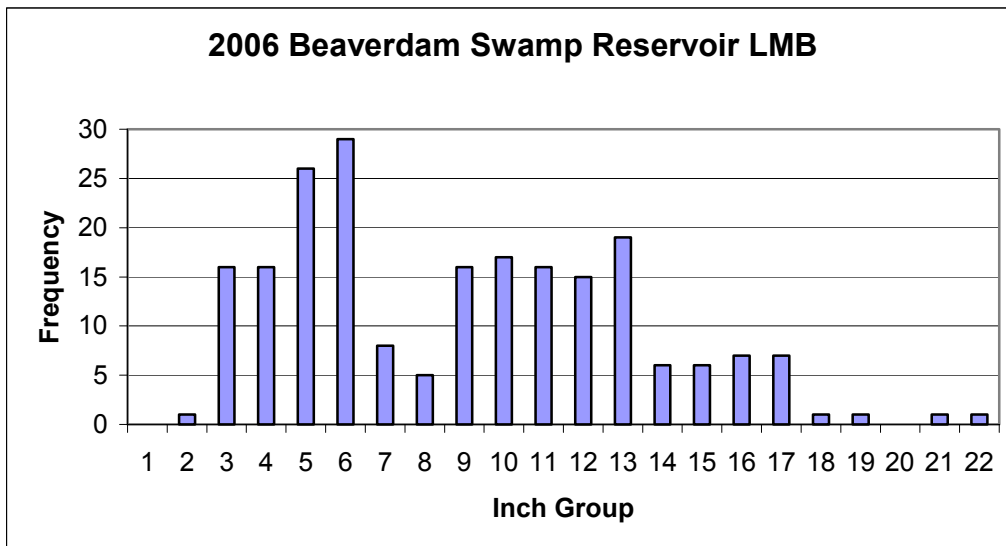


Figure 1. Length frequency distribution of largemouth bass collected from Beaverdam Swamp Reservoir on April 24, 2006. (N = 214, CPUE = 107 f/hr)

Fisheries biologists of the past established certain size classifications to describe the fish they collected. It is through these size classifications that population dynamics are analyzed. The size designations are stock, quality, preferred, memorable, and trophy. The PSD (Proportional Stock Density) is the proportion of bass in the population over 8 inches (stock size) that are also at least 12 inches (quality size). A balanced bass/bluegill fishery has a bass PSD value within the 40 – 70 range. With largemouth bass being the most popular game fish in this country, it has been considered that a “preferred” bass is one that is over 15 inches in length. The RSD-P (Relative Stock Density of Preferred bass) is the proportion of bass in the population over 8 inches that are also at least 15 inches. The PSD and RSD-P values represent the distribution of collected fish, but one must take into account the total number of bass collected along with the total of stock-sized bass in the sample.

The 2006 sample showed a high PSD value of 59, which is a direct reflection of the 71 bass that were 12 inches or longer. The sample had a total of 121 bass that were stock size or larger. This PSD value is toward the high end of a balanced bass/bluegill fishery. This PSD value is lower than the 2005 PSD value of 68, which reflected a higher percentage of bass greater than 12 inches. Although the PSD value decreased, the 2006 survey still showed the largemouth bass population to be reasonably balanced. The 2006 RSD-P value of 20 is a direct reflection of the 24 preferred-sized bass collected. The RSD-P value is not all that impressive, but it is still an improvement from the 2005 RSD-P value of 17.

Weights were taken on largemouth bass to calculate relative weight values. Relative weight values are an indication of body condition. A value from 95 to 100 represents a fish that is in the healthy range and finding a decent amount of food. The higher the value, the better the condition of the fish in terms of overall body mass. The relative weight values for stock, quality, preferred and memorable bass (>8", >12", >15", >20") were 93, 95, 100, 117 respectfully. These values showed a good improvement from the 2005 sample (90, 90, 94 and 91 respectfully). The 2006 relative weight values show that the fish are successfully finding enough prey items to forage upon. Stock-sized bass in the 8 to 12 inch range had a relative weight slightly below the desired 95 to 100 range. The two memorable-sized bass had the very impressive relative weight of 117, which reflects upon the abundance of small forage they can feed upon.

The sample revealed the bluegill fishery to be dominated by fish less than 6 inches in length. Electrofishing effort was able to collect 263 bluegills in 40 minutes of sampling effort. This CPUE of 394.5 bluegills/hr showed a major increase from the 2005 sample (CPUE = 240.75 bluegills/hr). The 2006 catch rate compares more closely to the 2004 sample (370.7 bluegills/hr). The 2006 size distribution can be seen on the attached length frequency graph. The average sized bluegill was only 3 inches in length. The abundance of small bluegills present in the 1 to 2-inch group brought down the average length. The PSD for bluegill is the proportion of bluegill over 3.15 inches (stock size) that are also at least 5.9 inches (quality size). Due to the number of smaller fish, the bluegill PSD was only 20 and matched the value found in 2005. The 2006 collection consisted of 18 quality-sized bluegills in the 6 to 7.17-inch range. The PSD value is at the low end of the 20 to 40 range that would represent a balanced fishery. The total of 88 stock-sized bluegills were collected. The largest bluegill measured 7.17 inches in length.

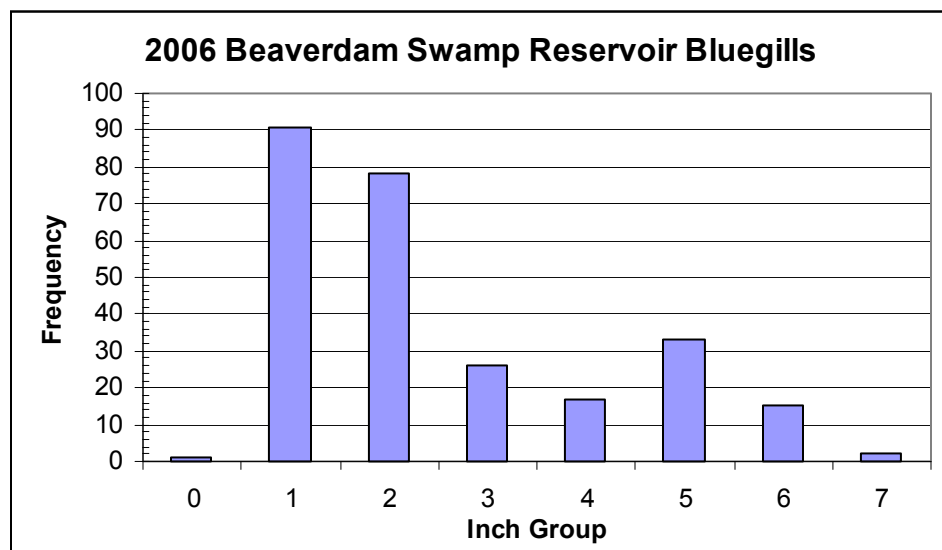


Figure 2. Length frequency distribution of bluegills collected from the electrofishing sample of Beaverdam Swamp Reservoir on April 24, 2006. (N = 263, CPUE = 394.5/hr)

Trap net sampling was conducted on Beaverdam Swamp Reservoir on April 12-14, 2006. The main purpose of this type of sampling is to collect the schooling fish such as black crappies and redear sunfish that may not be fully represented during a typical shoreline electrofishing sample. The reservoir was divided in half with 10 trap nets set on the northern half of the reservoir the first night and then 10 nets reset to the southern half of the reservoir on the second night. A total of 20 net nights were used to assist with the evaluation of the fishery. The trap nets were able to collect 15 species of fish. The nets were very successful in catching bluegills. A total of 4,489 bluegills were collected over the course of two nights. The majority of the bluegills were in the 2 to 4 inch range. A total of 610 bluegills greater than 6 inches were collected. Only one bluegill greater than 8 inches was collected as that fish measured 8.1 inches in length. The abundance of small bluegills offers a great prey source for the adult predators in the fishery.

The black crappie population appears to be in decent shape. The 2006 electrofishing sample was able to collect 78 black crappies for a CPUE of 39/hr. This catch rate is much lower than the 2005 survey (CPUE 83.25/hr). This difference could be associated to the variable distribution of black crappies. The numbers of any given sample can become elevated if a few schools of crappies are encountered during sampling. No large schools of black crappies were encountered during the 2006 survey. The size distribution of the 2006 sample can be seen on the length frequency histogram. The majority of the collected crappies were in the 8 to 10-inch range. Trap net sampling was conducted during the spring of 2006 to gain valuable data on the black crappie population. At first glance, it appears that a few good year classes are driving the population. It also appears that recruitment over the last couple of years has been very poor. Only three crappies less than 6 inches in length were collected. The largest black crappie measured 12.7 inches. Taking into account the number of medium-sized black crappies, the average size was still 9.3 inches.

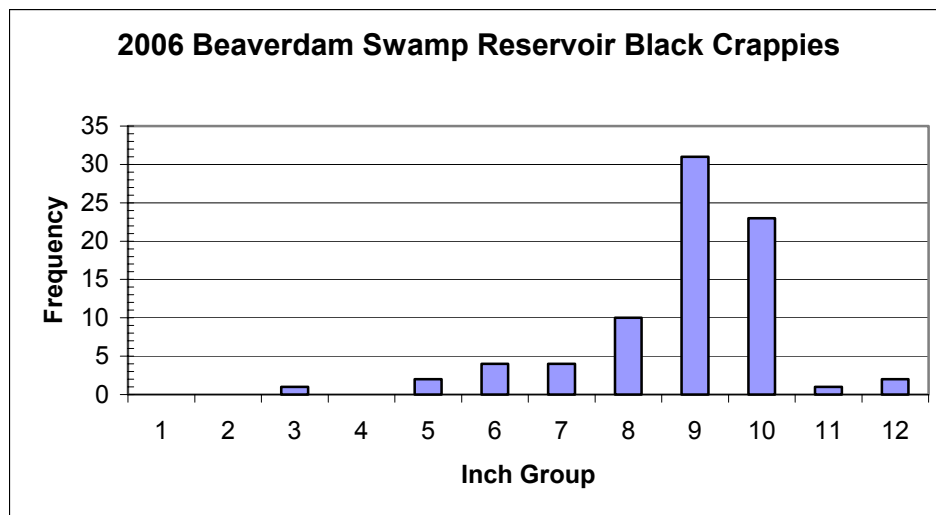


Figure 3. Length frequency distribution of black crappies collected from Beaverdam Swamp Reservoir on April 24, 2006 (N = 78, CPUE = 39/hr)

The trap net survey collected a total of 237 black crappies for a catch rate of 11.85 crappies/net night. The northern half of the reservoir yielded 146 black crappies and the southern half produced 91 black crappies. The majority of the sample consisted of crappies in the 9 to 11 inch range. A sub-sample of 127 crappies was used for length at age analysis. Otoliths were used to verify the average length of each age class. The fish ranged in age from 1 to 7 years old. The average length for each age group was: Age 1 = 5.3 inches, Age 2 = 8.8 inches, Age 3 = 9.4 inches, Age 4 = 9.7 inches, Age 5 = 9.8 inches, Age 6 = 10.3 inches and Age 7 = 10.9 inches. These age groups represent the mean length for the number of crappies collected from each year class. The 2002-year class was well represented with a total of 50 crappies being aged at 4-years old. Early indications appear to show that the growth rate of crappies slows when they reach the 9.5 to 10 inch size. This decrease in growth rate occurs in many waters around the region..

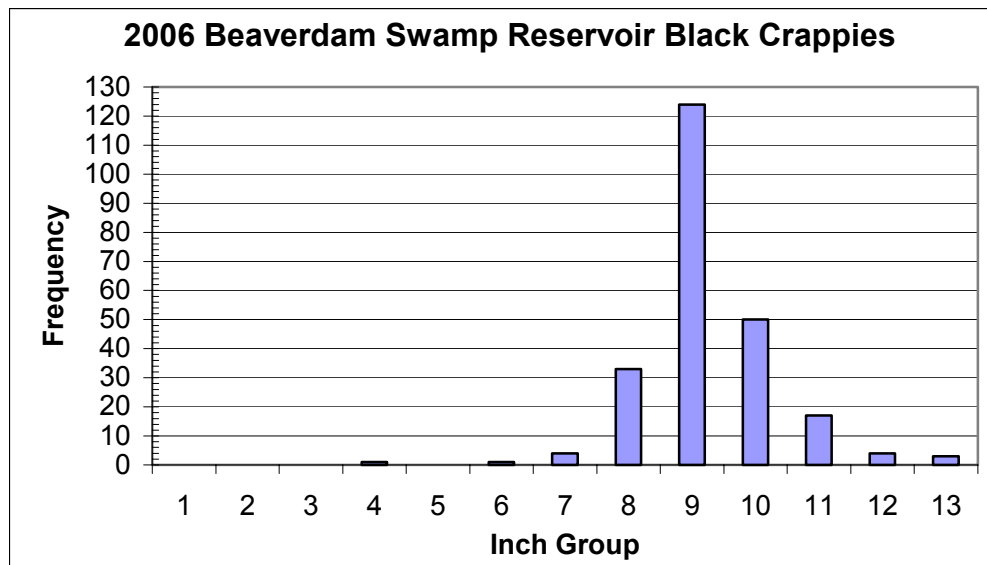


Figure 4. The size distribution of crappies collected from trap net sampling of Beaverdam Swamp Reservoir on April 12-14, 2006 (N = 237, CPUE = 11.85 f/net night)

The redear sunfish population appears to be in decent shape. A total of 51 redear sunfish were collected during 2 sample runs for a CPUE of 76.5/hr. This catch rate shows improvement over the 2005 sample (CPUE = 43.5/hr). The 2006 size distribution looks decent with a high percentage of the sample consisting of 5.5 to 8-inch fish. The average size redear sunfish measured 5.75 inches. The largest redear sunfish measured 8.15 inches. The trap net survey collected a total of 406 redear sunfish for a catch rate of 20.3 fish/net night. There were an abundance of redear sunfish in the 6 to 8 inch range with a fair number in the 8 to 10 inch range. The largest redear sunfish collected in the trap nets measured 12.9 inches. The shallow flats along the western side of the reservoir were the best spots for redear sunfish.

The remaining 6 species of fish collected in low abundance during the electrofishing survey were: brown bullhead, white perch, chain pickerel, gizzard shad, golden shiner and green sunfish. These species were collected during only two samples runs. The brown bullhead measured 12.5 inches. The white perch measured 8.8 inches. The chain pickerel measured 12.7 inches. No other chain pickerel were seen on the other runs. The gizzard shad measured 7.2 inches. The golden shiner measured 7.9 inches. The two green sunfish measured 2.4 and 7.1 inches. These fish provide some diversity to the fishery and the possibility of exciting an angler from time to time.

The trap net survey collected a total of 15 species of fish. The remaining species not covered in the previous text of this report were: American eel, pirate perch, white perch, pumpkinseed sunfish, gizzard shad, golden shiners, banded sunfish, bluespotted sunfish, largemouth bass, green sunfish, brown bullheads and creek chubsuckers. These species, for the most part were collected in limited abundance. A total of 50 white perch (CPUE = 2.5/net night) were collected by the trap nets. These white perch ranged in size from 7 to 10 inches with the majority in the 8.5 to 9.5 inch range. The two other species that showed some abundance were the 45 green sunfish and the 65 golden shiners that were collected.

The trap netting and electrofishing survey of Beaverdam Swamp Reservoir showed a fishery consisting of 16 species of fish. The primary game fish species are the largemouth bass, bluegill, black crappie and redear sunfish. These species comprised the majority of the biomass in the sample. The reservoir provides some decent bass fishing. The numbers of citation-sized bass has dropped over the last few years. The reservoir had very impressive catch rates of citations from 1999 to 2002, with dozens of large bass caught each year. The citation data from 2006 showed a total of 20 citation-sized fish were reported. This total was represented by 10 citation bass, 6 black crappies, 3 sunfish and 1 channel catfish. The bluegill fishery is primarily based on small fish less than 6 inches in length. The electrofishing of black crappies was spotty. The schooling nature of black crappies makes for a difficult time of finding them. They tend to school in deeper water more than bass and bluegill and make their way to the banks later in the spring. The majority of black crappies were in the 8 to 10 inch range. The reservoir produces some nice redear sunfish with good numbers of 7 to 9 inch fish present.